

The Study of Natural History.

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AN

ADDRESS

DELIVERED BEFORE THE

LINNÆAN ASSOCIATION

OF

PENNSYLVANIA COLLEGE,

GETTYSBURG, PA.

AT THE ANNUAL COMMENCEMENT, SEPT. 19TH, 1849.

BY DANIEL M. SMYSER, A. M.

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GETTYSBURG:

PRINTED BY H. C. NEINSTEDT.

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*Pennsylvania College, September 20th, 1849.*

D. M. SMYSER, Esq.

DEAR SIR,—We acknowledge our obligations to you for the excellent Address you kindly delivered last evening and, in behalf of the Linnæan Association, we solicit a copy for publication.

We have the honor to be

With great respect,

Your obedient servants,

M. L. STOEVER,

D. GILBERT,

W. D. RÆDEL,

P. BORN, Jr.

C. H. HERSH,

P. S. LEISENRING,

Committee &c.

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*Gettysburg, September 20th, 1849.*

GENTLEMEN—

The Address, I had the honor to deliver by your request, is your own property, and as such is, of course, at your own disposal.

In compliance, therefore, with your wishes, as expressed in your note of this day, I herewith furnish a copy to be disposed of as you may see proper.

Very respectfully,

Your obedient servant,

D. M. SMYSER.

TO PROFESSOR STOEVER, }  
AND OTHERS, }  
Committee.

## ADDRESS.

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### GENTLEMEN OF THE LINNEAN ASSOCIATION—

IN responding to your invitation to deliver the usual annual Address to your Society, I do not flatter myself with the hope that I shall be able to say much that will be either new or instructive. To do so on a subject like Natural History, would require a much more intimate acquaintance with its various interesting phenomena, than the uncongenial habits of a strictly professional life have enabled me to acquire. Bound, like *Ixion*, to the ever-revolving wheel of forensic agonism, whose ceaseless round is little favorable to the culture of general science, I have found but little time to cultivate any of the departments of the great field of labor, in which you are so laudably engaged; and when I have occasionally deviated into the shaded walks, or rested in the green retreats of Nature, it has been rather to sate the aching sense with her harmonies, than to detect their source; to inhale the fragrance of her flowers, rather than to analyse their structure. A few minutes, however, may not be vainly spent in considering the influence of the study of Natural History, in any of its interesting departments, in advancing the proper objects of Education.

Man, in this life, stands in a very interesting two-fold relation; First, to God, the author of our being, and Secondly, to Society, of which he is a member. Each of these relations involves corresponding duties. By the first, man is placed under an obligation to make his actions conform as nearly as possible to the Divine Will. By the second, there is imposed upon him the duty of studying the good and promoting the improvement of Society. The diligent and faithful discharge of these two classes of duty, in their various divisions, comprises the sum of moral duty as well as of Christian Ethics. To fit and prepare us for their discharge, is, or should be, the point aimed at in all Educational Systems.

Various attempts, both in ancient and modern times, have been made to map the human mind — to make, as it were, a chart of the intellectual world — some with greater, others with less, but none with perfect



success. This, indeed, grows out of the very nature of the mind itself: for, until the relations of time and space can be made to span infinity and compass eternity, the finite mind must remain unequal to the task of embracing all the infinite diversity and boundless extent of the universe of knowledge. Much of the time and labor devoted to the attempt has been wasted in scientific trifling and metaphysical inanities, having no other or better results than to dazzle the unlearned with the false glare of affected learning, and to bewilder the votaries of a pseudo philosophy in the mazes of their own subtle dialectics. Among none of the ancients do we find the combination of philosophical unity with a comprehensive, and at the same time, a distinctive classification. We shall fruitlessly seek it in the philosophy of the fathers; we shall search for it in vain in the unmeaning abstractions and incomprehensible subtleties of the schoolmen; we shall fail to find it in the mediæval age of scholastic wrangling, when the divine essence of Truth was confounded with her gross outward form, and when a philosophical principle was regarded with contempt, if not arrayed in the garb of syllogistic pedantry, when men broke their fast on an abstraction, dined on a syllogism, and supped on a chimera; and then, retired to their learned couches, oppressed with the *incubus* of a bewildered imagination, whose wild fancies and raving dreams, were gravely given to the world as the Pythonic oracles of divinely-inspired Truth. In the progress of time, this state of things prepared the way, by rendering apparent the necessity, for an improved system of Philosophy, more in harmony with nature and consonant with experience. Accordingly in the early part of the 17th century, we find Lord *Verulam*, the antitype of *Aristotle*, introducing that grand philosophical Reformation, which substitutes facts for theory and induction for syllogism; and whose distinguishing features are the elaboration of principles from a careful and extensive generalization, and a grand cosmographic view of the world of Science under a comprehensive and appropriate classification; thus simplifying the elements of knowledge, and leading the mind through an extended chain of causation, to the contemplation of the final cause, the grand originating principle of all created things.

Upon this new and substantial basis, Lock, Leibnitz, Descartes, Reid, Stewart and others erected those towering structures of composite thought and intellectual analysis, whose pinnacles and spires, radiant with the light of science, shall, through all future times, serve as beacons to guide the wandering mind through the night of error and the darkness of ignorance.

The map of the intellectual world, thus traced out by them, with its various divisions and subdivisions delineated, and their boundaries marked, is now spread out before the student, in all its amplitude and extent, for his study and contemplation.

The philosophical inquirer, however, will not rest satisfied with a mere topographical outline; he will aim at more thorough knowledge. The history of each department of learning, its relations to others, and their degrees of adaptation to the great purpose of life, will command his earnest attention and enlist his most active interest.

The nature of those purposes with their corresponding duties, and the relations in which they originate, have been already hinted at. These duties are correlative, and find their most potent sanction in the idea of man's accountability to the author of his being. This idea is primary and fundamental; take it away, and you remove the great moral lever that moves the human mind, controls its purposes and regulates its actions. But, the acknowledgement of responsibility to a Supreme First Cause pre-supposes its existence. At first view, it would seem as unlikely that men should be found to deny this existence, as that they should doubt their own. It is nevertheless true that in our day, as in those of Hume, d' Holbach and Voltaire, there are those who, discarding the light of Revelation, and taking a perverted view of the operations of Nature as the basis of an atheistic cosmology, deny the existenc as well as the Providence of the Almighty, and maintain that all organic as well as inorganic bodies, and even all sentient existences, are but the result of various accidental combinations of matter casually put in motion. It was, however, well suggested by the Rev. Professor Baugher, in a sermon a few Sabbaths ago, that this theory still leaves on its advocates, the *onus* of showing how and by what agency the primary impulse that first imparted motion to matter, was communicated; as well as of explaining, why, if accidentally set in motion, it should act according to fixed and unvarying laws, continually reproducing the same combinations and arrangement of parts and atoms, resulting in an infinite series of homogeneous products.

The attentive student of Nature, however, we suppose will see in her every feature, indubitable evidences of God's existence. He walks by *sight* as well as by *faith*. Taking him by the hand, she conducts him into her *penetralia*, reveals her most hidden mysteries, and discloses to his view the traces of design and Providence, in all her operations. The natural history of plants, minerals and animals abounds in this



species of evidence, amounting in its aggregate, to absolute demonstration, and far transcending any system of pedagogics, that human wisdom ever contrived, in the value of its truths, the impressiveness of its admonitions, and the efficacy of its examples. The learned Dr. Paley, in his treatise on Natural Theology, has presented the argument on this point, with a felicity of arrangement and force of illustration, that carries the mind by storm and forces conviction even upon the unwilling.

What evidences of design, for instance, are to be found even in a single flower! The bud in which the flower is enveloped and by which it is defended until florescence, the defences thrown around the organs of fructification, the roots by which it imbibes moisture from the earth, the porous or fibrous character of the stalk through means of which the nutritive sap is circulated, the knots or joints of the stalk, so contrived as to strengthen it to bear the increasing burthen of the expanding blossom and opening flower without obstructing the free ascent of the sap, the seeds of fructification with the manner of their preservation and diffusion and the process of generation, all show design in contrivance, and fitness and adaptation in the structure. Can the student of nature, seeing this elaborate, complex and suitable arrangement and provision even in such small matters as a blade of grass, a stalk of wheat, or a simple flower, refer it all to a fortuitious concourse of atoms? He will say at once, "there is too much nicety of contrivance and felicity of adaptation, and too regular a recurrence of like effects from similar causes, to render such a hypothesis even plausible." If it might accidentally occur *once*, it is not even within the bounds of reasonable possibility, that it should *uniformly* recur. Still less will he be disposed to refer such results to the agency of any finite created being. He knows that the mightiest finite intellect cannot create a blade of grass, or produce the humblest of the blossoms that enamel the flowery mead with variegated beauty and make it redolent of fragrance. There must then be a higher cause, mightier than man and superior to chance. By extending the argument a little further, he will arrive at the conclusion that this cause must be an underived, self-existing one; for if holding only a derivative existence, the power whence it is derived, must be its superior. A part cannot contain the whole, nor is the derivative equal to the primitive. Mounting upwards, thus, in the ascending scale of causation, he finally arrives at the great *First Cause of all*.

Extending his view, he will find all nature re-inforcing the argument. The leaves of trees, for example, are not only pleasing from the refresh-



ing shade they afford, but by their vessels and pores, become at once the organs of respiration and nutrition. The spare vessels in the stomach of the camel, wherein it lays up its extra stores of water, to be discharged at need into the proper reservoir, thereby enabling it to journey for days over its native deserts without a new supply; the moveable *antennæ* of certain insects supplying in them the defects of vision; the glutinous secretion with which the butterfly covers its eggs for their preservation, as if with a premonition of its immediately ensuing death; its instinct in depositing them on the leaves only of plants suitable for their food when posthumously hatched; the skill and strategy displayed by that ingenious and accomplished engineer, the Ant-lion; and a thousand still more significant facts, to which I cannot even now advert, but with which the accomplished naturalist is familiar, all proclaim, in harmonious unison, "*There is a God!*"

The verdant wood, the flowering garden, the standing pool and stagnant march, the watery realms of *Neptune* and *Nereus*, and the hidden and mysterious abodes of *Plutus*, — all join in the universal chorus, and attest a present *Divinity!* The *Naiades* raise the hymn of thanksgiving and praise, and the *Dryads* and *Hamadryads* join their whispering voices, and swell the choral strain!

Like *Memnon's* statue, which uttered melodious sounds at sunrise, so all Nature, when illumined and warmed by the beams of the rising Sun of Knowledge, becomes vocal with the high praises of *Nature's God!*

The whispering breeze comes laden with microscopic life. The gentle Zephyr, that scarce fans the cheek, and the bellowing storm that causes Nature's battlements to rock, bear alike on their wings the countless organized forms of creative power, hymnning their Creator's praise in sublimer strains than the "nymphs of *Solyma*" ever sung!

The hum of insects, the song of birds, the green reed, the bulrush, the "spiry fir," the "shapely box," the "flowery palm," the "odorous myrtle," the "seeds of gold" that shine in the mountains of Ophir, or sparkle on California's sands, the diamond glittering on the imperial brow of beauty, or dimly reposing in the mine in its elemental form of dingy carbon, the thousand forms of crystalline beauty that lie darkling in the recesses of the mineral world, and the rich gardens of coral, embosomed in the deep blue sea — all, all unite in the cry, "*Behold! A God appears!*" And when the pomp and glory of this world shall pass away like the early vapor and the morning cloud, when the fairest

and brightest of Creation's works shall be resolved into original Chaos,  
and

"When Nature hears with terror-mingled trust,  
The shock that hurls her fabric in the dust,"

When "her crumbling altars" shall decay, and "her incense fires shall cease to burn," even then, amid the tottering wreck and falling ruin, shall arise the expiring cry, "*The hand that made us is divine.*"

Well then may Natural History, a science that lays open to the student so vast a field for meditation and study, claim a prominent place in modern Systems of Education; and wisely and well have the Trustees and Faculty of Pennsylvania College done, in making it the subject of especial care and attention. Your Society, too, has already done much for its promotion, by the ascertainment of facts, and by inspiring a taste for the study, diffusing a knowledge of its value, and exciting a generous emulation in its culture. Persevere, then, in your laudable efforts, making the past bondsman to the future! Go on, as you have begun!  
and

"Whether ye sit on the topmost cliff  
While the storm around is sweeping,  
'Mid the thunder-shock, from rock to rock  
To view the light'ning leaping;"

or:

"Penetrate beneath the lake  
In whose depths eternal thunders wake,"

or plunge into the dark caverns of the mine, to explore the hidden treasury of Nature, you will, amidst all the interest, gratification and excitement of the pursuit, find abundant cause to exclaim

"These are thy glorious works, *Parent of good!*"

But we learn not only the *Existence*, but the *Providence* of God, from the works of *Nature*.

Although the human mind, when unfettered and free, spurns the thought of dependence, and is prone to assert its own dignity even to the extreme of presumptuous self-reliance, yet we do not shrink from the idea of dependence on God. On the contrary, we bow with humble submission to his sway, feeling that such vassalage is the truest nobility. We glory in our subjection, and love to think that his Providence is ever watching over and guarding us.

Now, in the various departments of Natural Science, especially that of Zoology, we find continual traces of a kind and superintending Pro-



vidence. If we survey the range of animated Nature, from its lowest to its highest forms, from the *Zoophyte* to the largest species of *Mammalia*, we shall find them all constituted with physical properties adapted to the wants of their condition, and habits and appetites adjusted to the necessities created by their physical organization and structure. We shall also find Nature like a provident and bountiful progenitrix, providing supplies as various and diversified as the wants thus existing, and, in every instance, proportioned to the demand created for their consumption. Thus, herbivorous animals, which combine the largest number and utility, find the earth spontaneously producing herbs and grasses for their sustenance in abundance, and suited, in each portion of its surface, to its particular indigenous class or species. Carnivorous animals, by preying on one another, prevent the multiplication of their several species to a degree dangerous or inconvenient to man, whilst the more noxious they are, the greater, generally speaking, is the diminution in their number from this cause.

Carion birds and beasts that feed on garbage, obscene and revolting as they are to a fastidious sense, have their utility, by consuming putrefying remains, thereby averting from man the diseases that would be generated from those remains during decomposition, and thus exerting a most extensive antiseptic agency in the kingdom of Nature.

But, it is not only in the *habits*, but also in the *structure* of animals that we can trace the Providential hand that made them. This is illustrated in the spherical structure of the crystalline humor in the eyes of fish, without which the effect of the refraction of the rays of light, in passing through the aqueous medium, would render their condition in the water intolerable. A familiar illustration is the air vessels in the bodies of fish, which become larger or smaller by muscular contraction or distension, and thus by increasing or diminishing the specific gravity of the body of the fish, enables it to rise or sink in the water. So also, birds rise or descend in the air by means of the communication between their respiratory organs and the cavities of their bodies. It is said, the gastric juice in the stomach of birds of prey, will not act on herbs or seeds. By a wonderful arrangement and multiplication of muscles, the caterpillar of the Goat-moth will raise a weight equal to fifty times its own, and the common flea leap two hundred times its own length, whilst the influence of respiration in stimulating and renewing the mobility and vigor of the muscles has been demonstrated by repeated experiments. In a word, the vital phenomena connected with

the entire Physiology of animal life, clearly reveal the wise and good Providence of the Author of Nature.

In inanimate nature, the same economy is observed. Plants seemingly useless or noxious, minister to the use and benefit of man. It is said, that the juice of the nettle, possesses the singular property of flexing steel. Taken into the nostrils, it arrests bleeding of the nose — whilst its seeds pulverized and taken inwardly, are said, to be a specific for the goitre. In tropical countries, where the intense heat renders labor more oppressive, vegetation is luxuriant and rapid whilst in colder countries it is of slower growth and requires a greater amount of labor.

"Thus waters, woods and waves the concert join,  
And echo swells the chorus to the skies."

Surrounded by all these evidences of a superintending Providence, and rendered familiar with them by the aid of Natural History, can man resist the conclusion that he is the object of its peculiar and signal care? Surely not. These observations in the world of Nature come in aid of his personal experience, and ought to write laws of gratitude on his heart. And who can estimate the effect and value of such an ever-present consciousness, in producing zeal in the performance of every duty and diligence in the discharge of every obligation? If the object of Education is to make good men and citizens, then the study of this Science, viewed in the light I have considered it, rises above the character of mere amusement and takes rank as a powerful auxiliary on the side of practical morality.

If we contemplate the world of Nature, we shall find every thing in constant activity. Progress, development, decay, re-production are forever going on around us. Nothing is idle: nothing seems to be created in vain. The grub, the worm, the chrysalis, the butterfly mark the course of progress and change; and no sooner is one cycle ended than another is begun. Each creature after its kind follows its destiny according to the law of its being. The hybernating animal, with the approach of spring emerges from its retreat, and under the guidance of its instinct, enters on its allotted range of exertion and activity. The trees put forth their buds, leaves, blossoms, fruit; then, like a ship furling her sails on going into port, begin to disrobe themselves of their mantle of green and dispose themselves for the repose of winter preparatory to a new season of like fruitful activity. Nature, in her secret laboratory within the bowels of the earth, is continually at work, forming new bodies by the union of earthy and alkaline bases; by the force of



internal fires upheaving islands from the sea and causing others to disappear; passing elementary substances through a bath of caloric, producing trap-rock, granite and basalt as the result of the igneous solution; in a word, performing on a stupendous scale, the thousand experiments on the elective affinity of bodies, which the chemist in his laboratory feebly attempts to imitate.

Shall man, alone, be idle amid this busy hum of industry? With faculties of almost boundless extensibility and powers which have never yet attained their full possible development, shall not the example of every thing around him, stimulate him to press on with activity and energy, towards the fulfillment of his destiny? Man has a soul of vast desires. Time cannot fill them. He has a mind, whose thirst after knowledge can only be quenched at the fountains of Eternity. He is conscious that its capacity, although not its power, is equal to its desires, but that in this life neither can be satiated. What then? Shall he stand still doing nothing, attempting nothing, desiring nothing? And when his relations with time are dissolved, enter on the career of eternity with nothing gained and every thing to acquire? Or shall he not rather aim at as high a point as he can attain, persuaded, that, in reference to intellectual growth and development, Eternity will take him up precisely where Time sets him down. If man, in a future state, is to find his delightful employment in forever advancing from one degree of knowledge to another in endless progression, his happiness augmenting in proportion as, by increase of knowledge, he approximates the Divinity, how disgraceful to enter on his Eternal career, quite unfurnished for the race! Shall nothing rouse him from this "Waveless calm," this "Slumber of the dead?" Shall he be like the *Talipot-tree* of the island of *Ceylon*, which once only and that on the verge of its existence, puts forth its leaves and bears its fruit — then withers, dies and rots? Or shall he not rather resemble the ever-green Pine or never-fading Myrtle, clothed in perennial freshness and unfading beauty? Shall he lavish his days in sloth and die of inanition? No! Let him rather seek to penetrate the mysteries of creation by a careful consideration of the harmonies of nature and Providence. Thus will he learn their laws, trace their affinities, and perceive the reciprocal agencies they exert on one another; and thus will he learn his duty, qualify himself for its practice, and fit himself for Eternity.

The sense, too, of the divine goodness, with our reverence for the Divine Being, cannot but be greatly increased, when we see the Archi-

fect of worlds, the Autocrat of the Universe, caring for the lowest and least of his creatures, and watching with guardian care over them all. The soul attuned to the harmonies of nature, will realize this feeling in all its exquisite fullness, most, when holding silent communion with her in her secluded and quiet retreats, where the lark carols lightly over head; the breeze that fans his brow wafts the sweet music of birds and breathes of flowers; the odors of the forest salute his senses, and the mysterious voices of the woods are in his ears; the humming insect lulls the drowsy sense to rest; the gilded butterfly clad in nature's garb of inimitable beauty, flits before his gaze; a thousand motes bask in the sunbeam, assuming to his dreamy view, forms of fantastic beauty and nameless grace; a sparkling rivulet, flowing through beds of flowers that seem to bend over the stream as if to gaze on their own star-like beauty, murmurs at his feet.

"A spot of life and light it seems,  
A fairy haunt for fancy dreams."

He, who in this sanctuary of Nature, can look on her beauties and list to her harmonies, and not feel his bosom swell with pious gratitude and holy reverence towards the *Being* who made them all, must have a heart "Cold as the rocks on Tornea's hoary brow!"

I shall have barely time to glance at a few of the other beneficial results of this study. Every one who has had any experience in life, is aware of the immense advantage of having early acquired habits of system and method, in study as well as in the operations of business. A little knowledge thoroughly acquired and well arranged, is worth ten times the amount of confused and undigested learning. The former may be compared to a select library, in which every book is well chosen, entered in its proper place in the catalogue, and ranged on its proper shelf: the latter to a prodigious collection of heterogeneous works, thrown together *pele-mele*, of which no book is ever to be found when it is wanted. Happy he, who can with truth apply to himself the words of the poet,

"*Condo et compono quæ mox depromere possim.*"

One of the purposes of Education is to form this habit. Now an essential feature in Natural History is the careful classification of the various birds, beasts, reptiles, insects, fossils, &c., about which it is conversant, according to their generic and specific properties and qualities,



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and in accordance with a discriminating and scientific nomenclature. Nothing can be more favorable to the formation of methodical habits.

Another important end of Education is to teach and accustom the mind to habits of sound and accurate discrimination. Much of the time, devoted in our colleges, to the higher Mathematics and Analytical studies, has this for its object. This useful habit of thought reaches its highest perfection when employed about subjects having a general resemblance, but discriminated by minute specific differences. In such cases, its exercise is difficult but very profitable. Now this is precisely the position which the naturalist occupies. He must arrange all the objects that engage his attention under their appropriate class, order, tribe, family, genus and species. Dealing with an almost infinite variety of objects, whose specific differences are often so slight as to cause them to be confounded, he must observe closely, analyse thoroughly, discriminate soundly. There are, for instance, more than ten thousand species of vegetable and animal fossils, whilst there are in the single department of Entomology, upwards of one hundred thousand species, each differing more or less visibly, some by almost imperceptible degrees from the rest. Hence the experienced and skilful naturalist will almost always be distinguished for the delicacy of his perceptions and the accuracy of his views.

Some, perhaps, may think that I have unduly magnified the claims of Natural History upon the attention of the learned ; that I ascribe to it a virtue equal to the artificial ivory shoulder of Pelops, which was fabled to heal all disorders by a touch. I have not sought to do so. Much more might be adduced than has been said, did time permit. It is only in later times that Natural History has assumed its proper position as a Science, and its value as such been rightly appreciated. The *genera plantarum* and *systema naturæ* of *Linnæus* gave to it a quickening impulse which yet vivifies and animates it. The labors of *Hedwig*, *Dillenius*, *Hooker*, and of the great *Linnæus* himself have illustrated its *Muscology*. *Buffon's* Natural History and its sequel, and the "*tableau élémentaire*" and "*règne animal*" of *Cuvier* are an Encyclopedia of *Zoology* and *Entomology*, as well as of the entire science. *Ornithology*, *Mineralogy*, *Crystallography*, *Zoophytology*, *Entomology*, have each in their turn, made rapid advances during the last twenty years ; but although many thousand species of plants and animals have been, in that time, discovered, analysed and classed, the field of labor in each is still as vast as it is interesting.



That you are resolved to cultivate it in earnest, your presence here, this commodious Hall erected by yourselves, and the valuable and extensive collection of specimens that already fill it, sufficiently attest. They also prove the enlightened policy of those invested with the government of the College, under whose auspices your Society exists, and should have the effect of inspiring confidence abroad and attracting crowds of youth to its halls.

That such may be the case, and that you and your successors may do much for the advancement of this interesting study, ought to be the aspiration of every lover of science. Explore, with unwearied diligence, the realm of Nature. Nowhere else will you find as impressive proofs of blended majesty and goodness in its Sovereign. Penetrate her most secret retreats : you will find none so remote or dark, that a ray of divine goodness has not reached it and lit up its gloom. Search her most hidden recesses ; for she has rich treasures laid up in store to reward the diligent and persevering. Thus may you promote your own enjoyment, contribute largely to the good of mankind, and advance the glory and honor of *Him* who called the world, with all its gigantic wonders and microscopic beauties, into being.

This is the end to which all education ought to tend ; in comparison with it, how valueless and unimportant do all others appear. The fires of intellect may be quenched ; the light of knowledge may be extinguished, and mental illumination be succeeded by Egyptian darkness, but the blaze of empyreal glory emanating from the sun and centre of the divine perfections shall never be obscured or extinguished,

“For oh ! the mellow light that pours  
From God’s pure throne — the light that saves !  
It warms the spirit as it soars,  
And sheds deep radiance round our graves ! ”

Let every other light be eclipsed, every other glory fade ; yet shall the refulgent beams radiating from the throne of the Almighty, illume life’s dreary waste, dispel the gathering gloom, and guide the immortal spirit on its upward flight to glory and to God. Let earth’s solid foundations be convulsed and shaken until the upheaved and tottering fabric shall fall in irremediable ruin ; let heaven’s ethereal vault become lurid with the flames and black with the smoke of a conflagrated world ; the *Christian’s Faith*, sustained by the *Christian’s Hope*, shall bear him up unmoved amidst the crash of shattered worlds falling into ruin, and enable him, with the steady piercing eye of *Christian Assurance*, to pene-

That you are resolved to cultivate it in earnest, your presence here, this commodious Hall erected by yourselves, and the valuable and extensive collection of specimens that already fill it, sufficiently attest. They also prove the enlightened policy of those invested with the government of the College, under whose auspices your Society exists, and should have the effect of inspiring confidence abroad and attracting crowds of youth to its halls.

That such may be the case, and that you and your successors may do much for the advancement of this interesting study, ought to be the aspiration of every lover of science. Explore, with unwearied diligence, the realm of Nature. Nowhere else will you find as impressive proofs of blended majesty and goodness in its Sovereign. Penetrate her most secret retreats : you will find none so remote or dark, that a ray of divine goodness has not reached it and lit up its gloom. Search her most hidden recesses ; for she has rich treasures laid up in store to reward the diligent and persevering. Thus may you promote your own enjoyment, contribute largely to the good of mankind, and advance the glory and honor of *Him* who called the world, with all its gigantic wonders and microscopic beauties, into being.

This is the end to which all education ought to tend ; in comparison with it, how valueless and unimportant do all others appear. The fires of intellect may be quenched ; the light of knowledge may be extinguished, and mental illumination be succeeded by Egyptian darkness, but the blaze of empyreal glory emanating from the sun and centre of the divine perfections shall never be obscured or extinguished,

“For oh ! the mellow light that pours  
From God’s pure throne — the light that saves !  
It warms the spirit as it soars,  
And sheds deep radiance round our graves !”

Let every other light be eclipsed, every other glory fade ; yet shall the refulgent beams radiating from the throne of the Almighty, illume life’s dreary waste, dispel the gathering gloom, and guide the immortal spirit on its upward flight to glory and to God. Let earth’s solid foundations be convulsed and shaken until the upheaved and tottering fabric shall fall in irremediable ruin ; let heaven’s ethereal vault become lurid with the flames and black with the smoke of a conflagrated world ; the *Christian’s Faith*, sustained by the *Christian’s Hope*, shall bear him up unmoved amidst the crash of shattered worlds falling into ruin, and enable him, with the steady piercing eye of *Christian Assurance*, to pene-



trate the murky veil that hides the light and veils the splendors of eternal truth. Approach then, her sacred fane; worship at her consecrated altar; and when death shall come to summon you hence, the same hand that cuts the thread that binds soul and body together, shall like the mythic Iris, grasp the bow of promise, typical of that blissful state in which the immortal spirit shall quench its burning thirst at the fountains of everlasting Wisdom.

Then shall all secrets be unfolded and all mysteries revealed. Then shall the disembodied spirit enjoy the beatific vision of illimitable knowledge, and pursue its quest after truth in the light of immortality. Then shall the same view embrace the Mastodon and the Mite; and the glance that takes in the cosmology of worlds shall also comprehend the physiology of the *Infusoria*. The laws that regulate the composition and resolution of substances, and that give vitality to matter, will then be clearly revealed under the teachings of Him who made them: the problem of life will be solved, and the formulæ of existence educed. Let, then, the cry that bursts from each noble heart, the aspiration that swells each generous bosom, be "onward!" and "upward!!" until, like the imperial bird of Jove, they shall be able to soar to the sempiternal source of intellectual light, and gaze unblenching on its full meridian blaze of glory!

